



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) EP 0 858 231 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:  
12.08.1998 Bulletin 1998/33

(51) Int Cl.<sup>6</sup>: H04Q 3/66

(21) Application number: 98300517.4

(22) Date of filing: 26.01.1998

(84) Designated Contracting States:  
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC  
NL PT SE  
Designated Extension States:  
AL LT LV MK RO SI

(30) Priority: 07.02.1997 US 797244

(71) Applicant: NORTHERN TELECOM LIMITED  
Montreal, Quebec H2Y 3Y4 (CA)

(72) Inventors:  
• White, Lester Lynn  
Raleigh, NC 27613 (US)  
• Singh, Harinder  
Raleigh, NC 27615 (US)  
• Fortman, Peter A.  
Raleigh, NC 27603 (US)

(74) Representative: Berkson, Michael David  
Nortel Patents,  
London Road  
Harlow, Essex CM17 9NA (GB)

(54) Long distance service bureau

(57) A long distance service bureau assists subscribers in selecting a long distance carrier for a long distance, or tariff, call. The long distance service bureau includes a rate table memory and a service logic element. The rate table memory stores rate data, representing tolls charged by various long distance carriers, and subscriber preference data, representing a subscriber's preferences for certain ones of the various long

distance carriers. The service logic element controls the rate table memory. The service logic element periodically communicates with the various long distance carriers to retrieve rate data changes, stores the rate data changes in the rate table memory, and downloads only the rate data changes to local equipment of the subscriber during idle periods of the subscriber's local equipment.

EP 0 858 231 A2

## Description

### Background Description

#### Background Art

Systems and methods consistent with the present invention are directed to a long distance service bureau that periodically polls long distance carriers for current rate information and stores user carrier preference information to automatically determine, or to allow a user to determine, a long distance carrier to use for a particular long distance, or tariff, call.

Traditionally, users selected long distance carriers for their long distance, or tariff, calls one of two ways. First, a user could designate a default long distance carrier through which all of the user's telephone calls were automatically routed. This type of selection was inherently insufficient because it did not take into consideration the different rates offered by other long distance carriers when the user placed the telephone call.

Second, a user could manually select a long distance carrier through which to route the user's telephone call. Such manual selection of a long distance carrier allowed the user to choose, for example, the long distance carrier offering the least expensive toll at the time the user placed the telephone call. Although permitting greater freedom of choice, manual long distance carrier selection presents several problems for the user. For example, to choose a long distance carrier other than the designated default long distance carrier, the user must manually select every telephone call. Moreover, to maximize the effectiveness of manual long distance carrier selection, the user must either be knowledgeable regarding various long distance parameters, or have ready access to such information. To select the long distance carrier offering the least expensive rate, for example, the user must know all of the available long distance carriers, as well as their various rates. To complicate matters, long distance rates for a particular long distance carrier vary not only from day to day, but from hour to hour as well.

Several recent systems address these traditional problems. For example, U.S. Patent No. 5,420,914 issued to Blumhardt discloses a system for real-time selection of a long distance carrier. The system employs an advanced intelligent network having a service control point that retrieves carrier rate information, such as tolls charged for particular calling days and calling times, for various long distance carriers from a network database. When a user places a telephone call, the service control point determines the long distance carrier having the least expensive toll for the day and time of the telephone call, and automatically routes the call using that long distance carrier.

The system of the Blumhardt patent has two inherent problems: it lacks flexibility and does not provide reliable carrier rate information. Flexibility is a problem be-

cause selecting the lowest-cost carrier may not always be the carrier the user wants for a particular call, since, for example, not all long distance carriers offer the same quality connection. Reliability is a problem because Blumhardt provides no mechanism for updating the carrier rate database so the carrier rate information becomes outdated due to the variable nature of the rates of the various long distance carriers.

A system that addresses one of these problems is U.S. Patent No. 4,751,728 issued to Treat. This patent discloses a telephone call monitoring, metering, and selection device that displays the rates offered by various long distance carriers to a user so that the user can select the carrier of his choice. The device requires the user to manually enter the identity of the various carriers and their access numbers and rates so that the device can display such information to the user when the user desires to place a telephone call. Because this system depends upon manual input of the rate information, however, the user must continuously update the rate information to current information.

Another system that addresses this problem is U.S. Patent No. 5,400,395 issued to Berenato. This patent discloses a telephone line selector that polls the various long distance carriers for current rate information each time a user places a telephone call. When the user dials a long distance telephone number, the telephone line selector temporarily suspends the user's call while it calls each long distance carrier to obtain current rate information. Once the telephone line selector determines the lowest cost long distance carrier, it routes the user's telephone call on the lowest cost carrier, using the dialed telephone number. Because this system updates all of the rate information for the long distance carriers each time the user places a long distance call, however, the system tends to be undesirably slow.

In light of the above systems, a need exists to rapidly provide users with current rate information while also permitting automatic carrier selection for particular calls.

#### Disclosure of the Invention

Systems and methods consistent with the present invention address this need by providing a long distance service bureau that rapidly provides users with current rate information offered by various long distance carriers, permits users to choose their long distance carrier on a per call basis, and automatically selects long distance carriers for particular tariff calls according to user preferences.

In accordance with the purpose of the invention as embodied and broadly described herein, the long distance service bureau consistent with the principles of the present invention includes a rate table memory and a service logic element. The rate table memory stores rate data, representing tolls charged by various long distance carriers, and subscriber preference data, repre-

senting a subscriber's preferences for certain ones of the various long distance carriers. The service logic element controls the rate table memory. The service logic element periodically communicates with the various long distance carriers to retrieve rate data changes, stores the rate data changes in the rate table memory, and downloads only the rate data changes to local equipment of the subscriber during idle periods of the subscriber's local equipment.

### **Brief Description of the Drawings**

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate systems and methods consistent with this invention and, together with the description, explain the objects, advantages and principles of the invention. In the drawings,

Fig. 1 is a diagram of a communications network containing the long distance service bureau consistent with the present invention;

Fig. 2 is a diagram of the components of the long distance service bureau in the embodiment of the communications network depicted in Fig. 1;

Fig. 3 is a flowchart of an operation consistent with the present invention for maintaining a current mini-rate table in an ADSI-compatible telephone;

Fig. 4 is a flowchart of a process consistent with the present invention by which the subscriber places a telephone call;

Fig. 5 is a diagram of a communications network containing the long distance service bureau consistent with the present invention;

Fig. 6 is a diagram of the components of the long distance service bureau in the alternative embodiment of the communications network depicted in Fig. 5;

Fig. 7 is a flowchart of an operation consistent with the present invention for setting up and maintaining the subscriber profile memory and the rate table memory shown in Fig. 6; and

Fig. 8 is a flowchart of a process consistent with the present invention by which the subscriber places a telephone call.

### **Best Mode for Carrying Out the Invention**

The following detailed description of the invention refers to the accompanying drawings that illustrate preferred embodiments consistent with the principles of this invention. Other embodiments are possible and changes may be made to the embodiments without departing from the spirit and scope of the invention. The following detailed description does not limit the invention. Instead, the scope of the invention is defined only by the appended claims.

The long distance service bureau consistent with

the principles of the present invention rapidly provides a subscriber of the long distance service bureau with rate information offered by various long distance carriers, taking into account the subscriber's preferences, and permitting manual or automatic selection of a carrier at the discretion of the subscriber based on the rate information and the subscriber's preferences.

### **I. Connection via Local Switch**

#### **A. Network Elements**

Fig. 1 is a diagram of a communications network containing the long distance service bureau of the present invention. Subscribers communicate with long distance service bureau (LDSB) 1100 via a local end office/PBX switch, such as switch 1200.

For simplicity purposes only, Fig. 1 shows a single subscriber who has an Analog Display Services Interface (ADSI)-compatible telephone 1300. ADSI-compatible telephone 1300 has internal processor 1310 and memory 1320, handset 1330, dial pad 1340, visual display 1350, and soft keys 1360. A conventional ADSI-compatible telephone is described in U.S. Patent No. 5,416,831 issued to Chewning, III et al.

ADSI-compatible telephone 1300 connects to switch 1200 using a conventional ADSI connection, typically a bidirectional protocol based upon dual-tone multiple-frequency (DTMF) and BELL 202 modem signaling. Switch 1200 connects to LDSB 1100 using a T1-UTT connection. LDSB 1100 connects to various long distance carriers' Operation Support Systems (OSS), such as carrier 1 OSS 1400 through carrier n OSS 1500, via a telecommunications network, such as X.25 network 1600, to poll the long distance carriers regarding their long distance rates.

Fig. 2 shows the elements in LDSB 1100, including service logic 2100 and rate table memory 2200. Service logic 2100 includes a conventional processor executing software to facilitate communication with ADSI-compatible telephone 1300 and carrier OSSs 1400 through 1500.

Rate table memory 2200 includes a large capacity memory device, such as a disk array, for storing rate information, subscriber preference data, and special plan data for all subscribers of the long distance service bureau. The rate information includes tolls charged by the various long distance carriers to call a particular location at a certain day and time. The subscriber preference data includes the subscriber's preferences for a particular long distance carrier for certain situations or for certain dialed telephone numbers. For example, the subscriber preference data might include the subscriber's desire to always use a certain long distance carrier for a particular long distance telephone number or other information, such as, for example, "always

use XYZ carrier unless greater than 3 cents a minute savings" or "never use ABC carrier." The special plan data might include special rates or savings plans offered by the long distance carriers.

Service logic 2100 communicates with carrier OSSs 1400 through 1500 to update the rate information and the special plan data stored in rate table memory 2200. Service logic 2100 communicates with ADSI-compatible telephone 1300 while ADSI telephone handset 1330 is on-hook to store a mini-rate table in ADSI telephone memory 1320. ADSI telephone memory 1320 stores only a subset of the information in rate table memory 2200 due to the memory's limited capacity.

Preferably, the mini-rate table includes rate information for only routinely called zones and possibly a "wild-card" zone for infrequently called numbers. A zone is an area serviced by one or more long distance carriers, for example, the east and west coasts of the United States, Ottawa, and the United Kingdom would constitute zones. ADSI telephone processor 1310 determines which zones constitute the routinely called zones based on the subscriber's calling pattern. Alternatively, the subscriber can designate the routinely called zones via soft key or dial pad input.

#### B. Network Processing

Fig. 3 is a flowchart of an operation consistent with this invention for maintaining a current mini-rate table in ADSI-compatible telephone 1300. The subscriber subscribes to the service offered by LDSB 1100 (Fig. 1) [step 3100]. In this initial subscription step, LDSB 1100 records the subscriber's name, telephone number, and information regarding any long distance savings plans to which the subscriber belongs in rate table memory 2200. Also at this time, the subscriber informs LDSB 1100 of the subscriber's long distance carrier preferences.

Based on the information received from the subscriber and information retrieved from carrier 1 OSS 1400 through carrier n OSS 1500, LDSB 1100 generates a mini-rate table for the subscriber [step 3200]. The mini-rate table contains rate information for the subscriber's routinely called zones, the subscriber's subscriber preference data, and any special plan data offered by the long distance carriers. The mini-rate table is configured as a look-up table using such criteria as the called zone, the day of the week, and the time of the day.

Once LDSB 1100 generates the mini-rate table, LDSB 1100 downloads it to ADSI-compatible telephone 1300. LDSB 1100 downloads the mini-rate table when ADSI telephone handset 1330 is on-hook, so ADSI-compatible telephone 1300 is not being used by the subscriber [step 3300]. LDSB 1100 uses a conventional Utility Test Trunk (UTT) for this automatic download.

LDSB 1100 periodically polls carrier 1 OSS through carrier n OSS to update rate table memory 2200 [step 3400]. After every polling, LDSB 1100 determines which mini-rate tables are affected by the update, and updates the mini-rate tables associated with the affected subscribers [step 3500]. As with the initial download of the mini-rate table, LDSB 1100 updates the subscriber's mini-rate table during idle periods of ADSI-compatible telephone 1300 using a conventional UTT.

Fig. 4 is a flowchart of a process consistent with this invention by which the subscriber places a telephone call. After the subscriber lifts ADSI telephone handset 1330 and dials a telephone number using dial pad 1340 [step 4100], ADSI telephone processor 1310 detects the dialed digits and determines whether the subscriber dialed a local or a long distance telephone number [step 4200]. Processor 1310 might make this determination by detecting the number of dialed digits or by detecting whether the first digit dialed is a "1".

If processor 1310 determines that the subscriber dialed a local telephone number, then it routes the call on the local carrier [step 4300]. If the subscriber dialed a long distance telephone number, processor 1310 determines whether the telephone number dialed is a preferred telephone number, that is, a telephone number for which the subscriber has preselected a preferred carrier [step 4400]. Processor 1310 makes this determination by comparing the dialed telephone number to the subscriber preference data stored in the mini-rate table in memory 1320.

If the subscriber dialed a preferred telephone number, processor 1310 determines the identity of the preselected preferred carrier from the mini-rate table and routes the call on the preferred carrier by prefixing the dialed digits with the preferred long distance carrier's Carrier Code [step 4500]. If the subscriber did not dial a preferred telephone number, processor 1310 determines the zone for which the telephone call is to be routed based on the dialed digits [step 4600]. For example, if the subscriber dialed 1-202-123-1234, processor 1310 would determine based on the first dialed "1" that the subscriber dialed a long distance number, and based on the next three numbers that the subscriber dialed a telephone number in the east coast zone.

Once processor 1310 determines the called zone, processor 1310 determines which long distance carriers service the called zone. Processor 1310 then determines whether the mini-rate table stores subscriber preference data or any special plan data associated with these long distance carriers to compile a list of long distance carriers that can service the long distance telephone call.

Processor 1310 presents the long distance carrier list to the subscriber to aid the subscriber in se-

lecting a long distance carrier [step 4700]. Preferably, processor 1310 displays on ADSI telephone visual display 1350 the available long distance carriers and their rates corresponding to the day and time of the subscriber's telephone call [step 4700]. Based on the information displayed, the subscriber selects a long distance carrier for the telephone call using ADSI telephone soft keys 1360 [step 4800]. Processor 1310 then routes the call on the selected carrier by prefixing the dialed digits with the selected long distance carrier's Carrier Code [step 4900].

Alternatively, processor 1310 might present the available long distance carriers and their rates to the subscriber via voice messaging over ADSI telephone handset 1330. The subscriber could then select the long distance carrier for the telephone call using ADSI telephone dial pad 1340 or by simply speaking into handset 1330. Processor 1310 would detect the subscriber's selection using a conventional tone detection or voice detection system.

## II. Connection via Communications Network

### A. Network Elements

Fig. 5 shows a communications network containing a long distance service bureau in an alternative embodiment consistent with the principles of the present invention. The subscriber again connects to long distance service bureau (LDSB) 5100 using ADSI-compatible telephone 5200. However, unlike the network of the embodiment shown in Fig. 1, ADSI-compatible telephone 5200 connects to LDSB 5100 via a telecommunications network, such as Public Switched Telephone Network (PSTN) 5300, by conventional means, such as described above. LDSB 5100 connects to carrier 1 OSS 5400 through carrier n OSS 5500 over PSTN 5300 to poll these long distance carriers for updated rate information.

Fig. 6 shows the components of LDSB 5100, including service logic 6100, rate table memory 6200, and subscriber profile memory 6300. Service logic 6100 includes a conventional processor executing software to process telephone calls from the subscribers and to facilitate communication with ADSI-compatible telephone 5200 and carrier OSSs 5400 through 5500. Service logic 6100 might communicate with a subscriber using an interactive voice response unit or detecting in-band DTMF tones.

Rate table memory 6200 preferably includes a large capacity memory device, such as a disk array, for storing rate information and special plan data. The rate information includes tolls charged by the various long distance carriers to call a particular zone at a certain day and time. The special plan data might include special rates or savings plans offered by the long distance carriers.

Subscriber profile memory 6300 includes a large capacity memory device that records subscriber preference data for all subscribers of the long distance service bureau. The subscriber preference data includes the subscriber's preferences for a particular long distance carrier for certain situations or for certain dialed telephone numbers, as described above.

Service logic 6100 communicates with carrier OSSs 5400 through 5500 to update the rate information and special plan data stored in rate table memory 6200.

### B. Network Processing

Fig. 7 is a flowchart of an operation consistent with this invention for setting up and maintaining subscriber profile memory 6300 and rate table memory 6200. Again, the subscriber subscribes to the long distance service bureau by conventional means [step 7100]. During this initial subscription step, the subscriber informs LDSB 5100 of any carrier preferences from which LDSB 5100 formulates the subscriber's profile data for storage in subscriber profile memory 6300 [step 7200].

Once LDSB 5100 generates the subscriber's profile data, LDSB 5100 is ready to service the subscriber. To assure that rate table memory 6200 has current carrier rate information, LDSB 5100 periodically polls carrier 1 OSS 5400 through carrier n OSS 5500 to update the rate information in rate table memory 6200.

Fig. 8 is a flowchart of a process consistent with this invention by which the subscriber places a telephone call. The subscriber preferably accesses LDSB 5100 by dialing its special toll-free 800 number [step 8100]. Alternatively, the subscriber could set up ADSI-compatible telephone 5200 to automatically connect to LDSB 5100, which is done for voice activated dialing.

LDSB 5100 queries the subscriber for the subscriber's caller ID so that LDSB 5100 can retrieve the subscriber's profile and service preferences from subscriber profile memory 6300 [step 8200]. Alternatively, LDSB 5100 might detect the subscriber's caller ID from the subscriber's calling number.

Once LDSB 5100 retrieves the subscriber's profile and service preferences, LDSB 5100 queries the subscriber for the long distance telephone number the subscriber wishes to call [step 8300]. Upon receiving the dialed digits via in-band DTMF tones, LDSB 5100 formulates carrier rate information based on the subscriber's profile and service preferences from subscriber profile memory 6300 and the rate information and special plan data from rate table memory 6200 [step 8400]. Alternatively, LDSB 5100 might query carrier 1 OSS 5400 through carrier n OSS 5500 for updated rate information or special rates to use in formulating the carrier rate

information.

LDSB 5100 downloads the carrier rate information to ADSI-compatible telephone 5200 [step 8500]. The carrier rate information is sufficient to permit the subscriber to choose and place the long distance telephone call using any of the carriers for which rate information was provided, or using a default carrier. LDSB 5100 may disconnect at this point or may stay connected until the subscriber makes a selection to provide help or other information.

Based on the carrier rate information, the subscriber selects a carrier to launch the long distance telephone call [step 8600]. Once the subscriber selects the carrier, ADSI-compatible telephone 5200 automatically releases, that is, goes on-hook for greater than 1.55 seconds, then originates a call prefixing the selected carrier's Carrier Code to the dialed digits. Alternatively, the subscriber could set up the subscriber's profile in subscriber profile memory 6300 to automatically select a carrier and cause ADSI-compatible telephone 5200 to automatically launch the call.

### III. Conclusion

The long distance service bureau according to the principles of the present invention provides the subscriber with great flexibility in selecting a long distance carrier from presenting the subscriber with a list of possible carriers and their corresponding rates to automatically selecting a carrier based on the subscriber's preferences.

The foregoing description of preferred embodiments of the present invention provides illustration and description, but is not intended to be exhaustive or to limit the invention to the precise form disclosed. Modifications and variations are possible in light of the above teachings or may be acquired from practice of the invention. For example, the subscriber has been described as connecting to the network using an ADSI-compatible telephone. This need not, however, be the case. The subscriber could, for example, use a personal computer or a specialized telephone to connect to the network, receive the carrier rate information, and launch the call. The scope of the invention is defined by the claims and their equivalents.

### Claims

1. A long distance service bureau, comprising: memory means for storing rate data representing tolls charged by various long distance carriers and subscriber preference data representing at least one subscriber's preferences relating to certain ones of the various long distance carriers; and a service logic element for controlling the memory means, the

service logic element comprising means for periodically communicating with the various long distance carriers to retrieve current rate data or rate data changes, means for storing the retrieved current rate data or rate data changes in a rate table memory of the memory means, and means for communicating data derived from the current rate data or rate data changes and the subscriber preference data to a local equipment of a subscriber.

2. A long distance service bureau as claimed in claim 1, wherein the service logic element includes means for generating a mini-rate table, the mini-rate table including rate data for a subscriber's routinely called zones and subscriber preference data corresponding to said subscriber, data of said mini-rate table being downloaded to the local equipment of the subscriber.
3. A long distance service bureau as claimed in claim 1 or claim 2, wherein only the rate data changes affecting the subscriber are downloaded to the local equipment of the subscriber.
4. A long distance service bureau as claimed in any preceding claim, wherein the communicating means downloads data to the subscriber's local equipment during idle periods of said equipment.
5. A long distance service bureau as claimed in claim 1, wherein the subscriber preference data is stored in a subscriber profile memory of the memory means, and the service logic element further comprises means for receiving a telephone call from the subscriber requesting long distance carrier rates for a tariff call and means for generating a list of long distance carriers from the rate data and the subscriber preference data, the communicating means communicating the generated list to the local equipment of the subscriber.
6. A long distance service bureau as claimed in claim 5, wherein the service logic element further comprises means for querying the subscriber for an identification number or for detecting a subscriber identification number from signals in the subscriber's telephone call, and means for retrieving subscriber preference data from the subscriber profile memory using the subscriber's identification number.

7. A long distance service bureau as claimed in claim 5 or claim 6, wherein the service logic element further comprises means for querying the subscriber for a telephone number corresponding to the tariff call; and wherein the generating means includes means for determining a zone for which the tariff call is directed, and means for including only long

distance carriers servicing the determined zone in the list of long distance carriers.

8. A network for routing a tariff telephone call comprising: a user telephone; a telecommunications connecting means connected to the user telephone for routing telephone calls; a plurality of long distance carrier systems connected to the telecommunications connecting means; and a long distance service bureau as claimed in any one of claims 1 to 9 connected to both the user telephone and the plurality of long distance carrier systems.
9. A network as claimed in claim 8, wherein the telecommunications connecting means comprises a public switched telephone network (PSTN).
10. A method for assisting a subscriber in selecting a long distance carrier for a tariff call, comprising the steps of: receiving subscriber preference data representing the subscriber's preferences relating to certain ones of the various long distance carriers; periodically communicating with the various long distance carriers to retrieve rate data or rate data changes representing tolls charged by said carriers; generating carrier information by deriving data from said rate data or rate data changes and said subscriber preference data; and communicating carrier information data to local equipment of the subscriber.
11. A method as claimed in claim 10, wherein the carrier information data comprises only the data rate changes retrieved from the long distance carriers that affect the subscriber.
12. A method as claimed in claim 10 or claim 11, wherein the carrier information data is communicated to the local equipment of the subscriber during idle periods of said subscriber equipment.
13. A method as claimed in claim 10, wherein the method steps are executed by a network server, and carrier information data is communicated to the local equipment of the subscriber in response to a telephone call received from the subscriber requesting long distance carrier rates for a tariff call.
14. A method as claimed in claim 13, wherein it further comprises the steps of querying the subscriber for a subscriber identification number or detecting a subscriber identification number from signals in the subscriber's telephone call and retrieving subscriber profile data (subscriber preference data) using the subscriber's identification number.
15. A method as claimed in claim 13 or claim 14, wherein it further comprises the step of querying the sub-

scriber for a telephone number corresponding to the tariff call; and wherein the generating step comprises the sub-steps of determining a zone for which the tariff call is directed, and generating carrier information based on current carrier rates offered by the long distance carriers servicing the determined zone, and the subscriber profile data.

16. A method for placing a tariff call, comprising the steps, executed by a processor, of: receiving a dialled telephone number; determining whether the dialled telephone number is a predetermined telephone number; routing the call on a predetermined long distance carrier when the dialled telephone number is the predetermined telephone number; and routing the call on a selected long distance carrier when the dialled telephone number is not the predetermined telephone number, the step of routing the call on the selected long distance carrier including the sub-steps of presenting rate information offered by long-distance carriers, and receiving a long distance carrier selection.
17. A method as claimed in claim 16, further comprising the steps of determining whether the dialled telephone number represents a tariff call and routing the call on a local carrier when the dialled telephone number is not a tariff call or determining a zone to which the tariff call is directed when the dialled telephone call is a tariff call.
18. A method as claimed in claim 17, wherein the presenting sub-step comprises the sub-step of presenting rate information for only long distance carriers servicing the determined zone.
19. A method as claimed in any one of claims 16 to 18, further comprising the step of updating the rate information presented in the presenting sub-step to current rate information offered by the long distance carriers during idle periods of the processor.
20. An apparatus for placing a tariff telephone call, comprising: memory means for storing long distance carrier data and corresponding rate data; output means for presenting a sub-set of the carrier data and corresponding rate data; updating means for receiving updated rate data during idle periods of the apparatus and for storing the rate data in the memory means; means for detecting when a subscriber has dialled a tariff telephone number corresponding to a tariff telephone call; means for causing the output means to present the sub-set of the carrier data and corresponding rate data when the dialled telephone number is detected; means for receiving a selection of a long distance carrier from the presented carrier data sub-set; and means for routing the tariff telephone call on the selected long

distance carrier.

21. An apparatus as claimed in claim 20, further comprising means for determining whether the dialled tariff telephone number is one of a plurality of predetermined telephone numbers; and means for routing the tariff telephone call on a predetermined long distance carrier when the dialled tariff telephone number is one of the plurality of predetermined telephone numbers.

22. An apparatus as claimed in claim 20 or claim 21, wherein the detecting means includes means for determining a zone for which the tariff telephone call is directed.

23. An apparatus as claimed in claim 22, wherein the output means includes means for presenting carrier data and corresponding rate data for only long distance carriers servicing the determined zone.

24. A telephone device for placing a tariff telephone call, comprising: a handset; a dial pad having a plurality of numbered keys; a memory for storing long distance carrier data and corresponding rate data; an output element for presenting a sub-set of the carrier data and corresponding rate data; and a processor for controlling the memory and the output element, the processor comprising: a receiving element configured to receive a telephone number entered via the dial pad, a determination element configured to determine whether the dialled telephone number is a predetermined telephone number, a presentation element configured to cause the output element to present the subset of the carrier data and corresponding rate data, a receiving element configured to receive a long distance carrier selection, and a routing element configured to route the tariff telephone call on a predetermined long distance carrier when the dialled telephone number is the predetermined telephone number, and to route the tariff telephone call on a selected long distance carrier when the dialled telephone number is not the predetermined telephone number.

25. A telephone device as claimed in claim 24, further comprising a set of soft keys; and wherein the receiving element configured to receive the long distance carrier selection comprises means for receiving the long distance carrier selection via the set of soft keys.

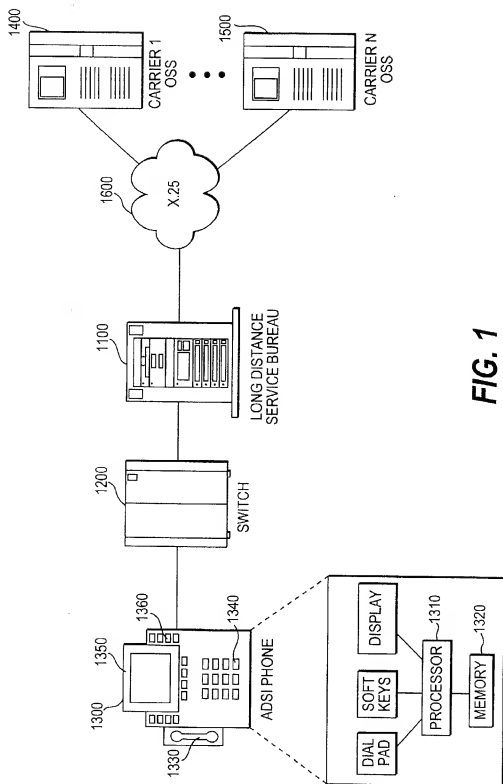
26. A telephone device as claimed in claim 23 or claim 24, wherein the processor further comprises a detection element configured to detect whether the dialled telephone number represents a tariff telephone call or a local telephone call; and, if the di-

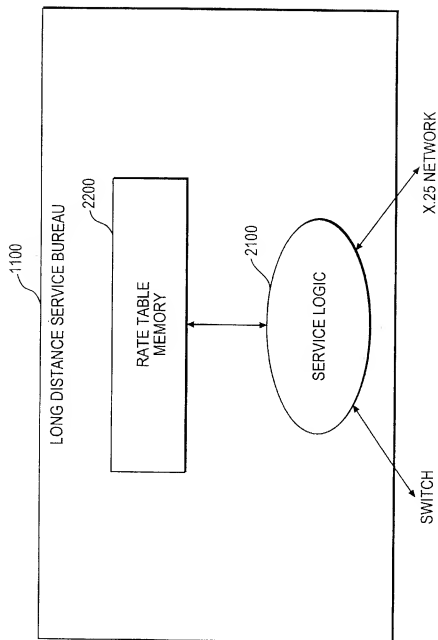
alled telephone number is detected as a local telephone call, the routing element routes the detected local telephone call on a local carrier or, if the dialled telephone number is detected as a tariff call, a zone determination element determines a zone for which the tariff telephone call is directed.

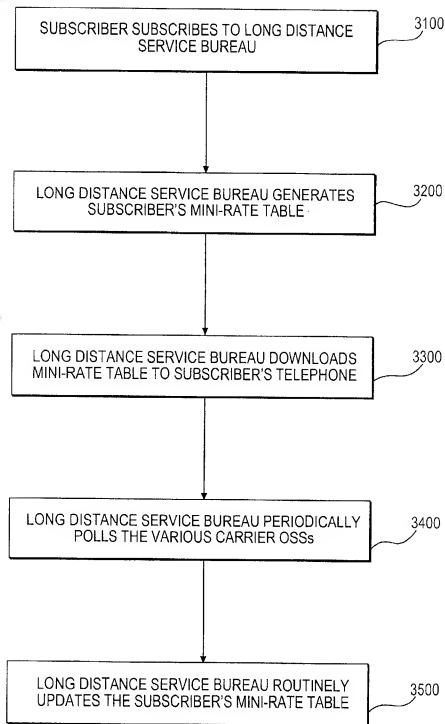
27. A telephone device as claimed in any one of claims 24 to 26, wherein the presentation element includes means for causing the output element to present the carrier data and corresponding rate data for only long distance carriers servicing the determined zone.

28. A telephone device as claimed in any one of claims 24 to 27, wherein the processor further comprises an updating element configured to update the rate data presented by the output element to current rate data for the long distance carrier data during periods when the handset is on-hook.

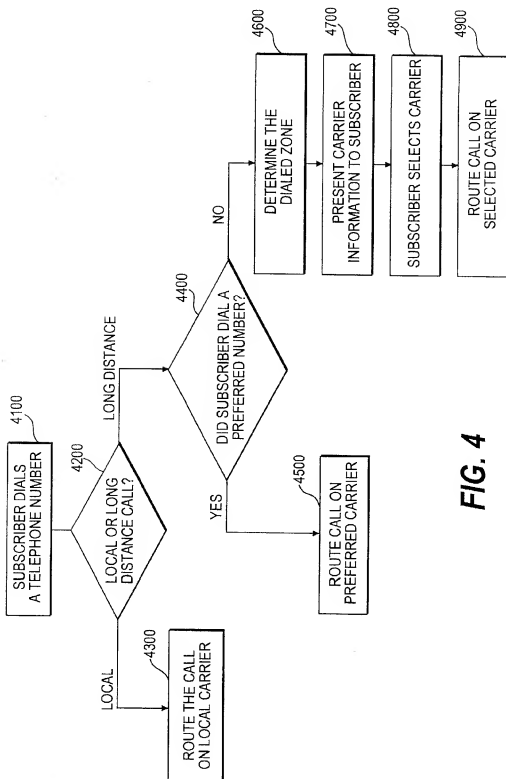


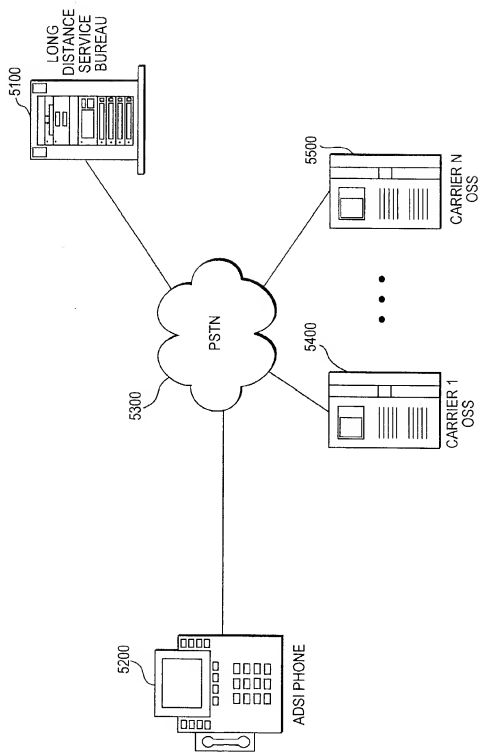
**FIG. 1**

**FIG. 2**

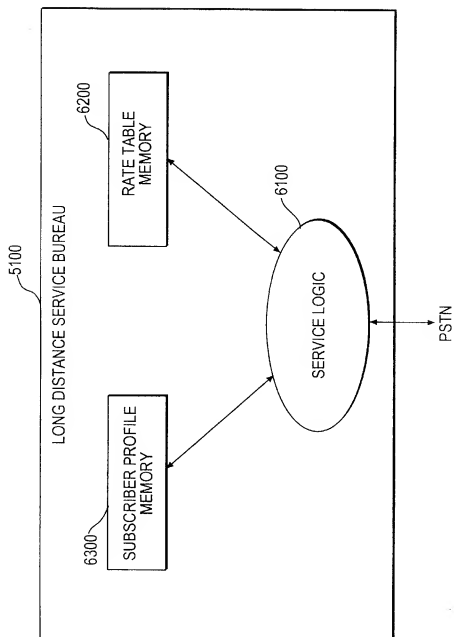


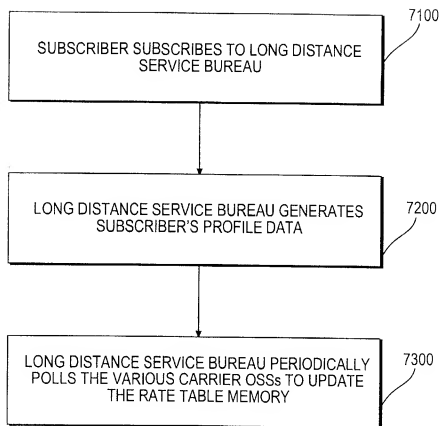
**FIG. 3**

**FIG. 4**

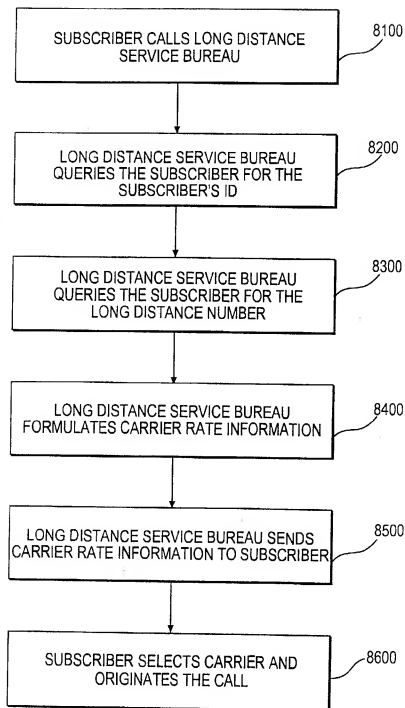


**FIG. 5**

**FIG. 6**



**FIG. 7**

**FIG. 8**